

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of)

Amendment of Parts 2, 15, and 97 of the)
Commission's Rules to Permit Use of Radio)
Frequencies Above 40 GHz for New Radio)
Applications)

ET Docket No. 94-124

To: The Commission

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**COMMENTS OF THE
MILLIMETER WAVE COMMUNICATIONS WORKING GROUP**

The Millimeter Wave Communications Working Group ("MWCWG" or "Working Group") hereby comments on the Second Notice of Proposed Rulemaking in the above-referenced proceeding.¹ Specifically, the Working Group comments on the issues associated with consideration of a spectrum etiquette for the general unlicensed band at 59-64 GHz, and expresses its support for and confidence in the deliberative process to consider such an etiquette, as envisioned by the Commission in the Second Notice.

I. Background And Statement Of Interest.

In December, 1995, the Commission made the 59-64 GHz band available for use by general unlicensed devices under Part 15 of the Commission's rules.² In addition, in recognition of

¹ Amendment of Parts 2, 15, and 97 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for new Radio Applications. First Report and Order and Second Notice of Proposed Rulemaking, ET Docket No. 94-124, RM-8308 (released December 15, 1995).

² Id. at para. 33

a broad consensus in favor of giving industry an opportunity to consider implementing a technical etiquette governing operation in the 59-64 GHz band, the Commission delayed implementing the rules governing this band for one year in order to permit industry to consider adopting such a set of standards.³

The Working Group was formed in February, 1996 in response to this decision. It is an alliance of companies representative of those engaged in the research, development, sales or marketing of information technology products. While its members vary by size and specific area of interest, each of its members shares an interest in the communication of information and a recognition of the potential importance of the general unlicensed band at 59-64 GHz.

Since its formation, the MWCWG has been considering development of a spectrum etiquette and is working toward the deadline specified by the Commission -- i.e., by December 15, 1996. Prior to that deadline, the Working Group will determine by a vote of its membership whether a specific set of access rules should be recommended to the FCC and, if so, what the nature and extent of those access rules should be.

Member companies are represented at the group's meetings by technical experts. These representatives may also draw upon technical resources from within their organizations when a particular specialty or knowledge is called for. Theories and proposals are discussed and reviewed with healthy skepticism about what is technically feasible.

The MWCWG is not simply a discussion group. It has identified a representative range of scenarios in which interference could be an issue and currently is studying several specific proposals against these scenarios. Members of the working group are performing propagation measurements and computer simulations in an attempt to develop an analytical basis for rational

³ Id. at para. 64

recommendations. The Working Group believes that its efforts will provide guidance to the Commission regarding technical rules for the 59-64 GHz band, based upon the collective judgment of its member companies.

In addition, the Working Group has taken steps to assure that it is open and accessible to all industry members interested in the consideration of technical rules for the band. For example, it has established a worldwide web site (<http://www.atg.apple.com/areas/wireless/default.html>) on which all meeting minutes, as well as other relevant information, are posted. The group has also sent press advisories to trade journals and other interested media outlets, and will continue to do so at appropriate times. In addition, interested parties are invited to phone the group chairman to obtain further information.⁴

II. The Working Group Strongly Supports The Commission's Decision To Allocate The 59-64 GHz Band For General Unlicensed Use And To Provide Industry A One-Year Period Within Which To Consider The Adoption Of A Spectrum Etiquette.

The MWCWG applauds the FCC's allocation of the 59-64 GHz band exclusively for general unlicensed use. Although its member companies' business interests range all the way from millimeter wave components to complete communication systems, they share the view that availability of 5 GHz of contiguous spectrum offers a unique opportunity for innumerable high-capacity wireless data products. The world's main information conduits -- optical fibers -- currently convey over 10 Gbps of data per fiber, and these data rates are continually increasing as light wave communications technology improves. In this context, it is not difficult to envision a world in which individual users will have access to hundreds of megabits of information per second. The Commission's allocation of 5 GHz of spectrum for unlicensed devices will make it

⁴ Rory Van Tuyl [415-857-6711], Chairman.

possible for individuals and organizations to create high-bandwidth wireless connections, accommodating multiple users at a single location, that take full advantage of the benefits of so much bandwidth without the costs and physical constraints of wired networks.

The 59-64 GHz band is ideally suited to meeting the demand for flexible, unlicensed, local area, high-bandwidth wireless connections. These frequencies are part of the "oxygen absorption band," which means that due to absorption by atmospheric oxygen waves transmitted at legal power levels will not travel beyond about one kilometer. Interference between widely separated transmitters is therefore unlikely, and ground-to satellite interference is not a problem, making the band naturally suited for short range communications of many types. Wireless LANs, point-to-point links, computer interconnects and personal multi-media devices are just a few of the applications that could take advantage of the unique characteristics of this band.

But although the oxygen absorption band solves the long-range interference problem, it does nothing to prevent interference between non-interoperating systems that are in close physical proximity. As use of the band becomes more widespread, some physical locations are likely to become congested and it may be necessary to have rules or mechanisms to ensure harmony for all operators. For this reason, adequate consideration must be given to the adoption of an access etiquette that would minimize the probability of interference among unlicensed 59-64 GHz devices. The MWCWG, therefore, strongly supports the Commission's decision to give industry a fixed period of time within which to consider the need for and content of such an "etiquette."

While the Working Group supports industry consideration of an etiquette, it believes that, if it proves necessary to have rules governing operation in the band, those rules need not be inhibiting or limiting of future technologies. To the contrary, effective use of unlicensed spectrum

may be dependent on a minimal set of rules that provides a framework for coexistence of devices and systems from multiple manufacturers, delivering many types of service. It is essential that such rules be flexible enough to allow the widest possible number of applications to co-exist in the band and to accommodate new technologies as they emerge.

III An Industry-Led Process Is The Most Effective Way To Ensure Effective Use Of the 59-64 GHz Band.

As noted above, MWCWG's members are engaged in a wide range of research, development, sales and marketing activities and all share an active interest in potential uses of the 59-64 GHz band. The Working Group believes that potential users of the band are in the best position to evaluate future needs, test those needs against technical and costs considerations, and develop a consensus proposal on the need for, and proposed nature and extent of, technical rules for FCC consideration.

It is important to note that the Working Group's members do not share a single perspective on the type of access rules that should be adopted for the 59-64 GHz band. Member companies' views range from a desire for no rules or only the most minimal guidelines to sophisticated proposals for an overarching spectrum etiquette. The MWCWG provides a valuable forum for all of these views to be debated and thoroughly discussed among industry experts before making a recommendation to the FCC.

This approach provides a number of important benefits. First, it creates a focused forum within which those with the most extensive knowledge of the risks and benefits of various technical rules can debate and determine alternative approaches in a timely manner. Second, it maximizes the probability that a widely-inclusive, easily implemented set of technical rules can be

developed. Finally, it frees the Commission from having to determine the feasibility of many different proposals, and allows it to reap the benefits of the collective efforts of industry leaders working together.

In order to achieve these goals, the MWCWG recognizes that the process must be kept open and must include a wide variety of inputs. The Working Group, therefore, has taken steps to communicate regularly with the many interested parties that may want to observe the process at work. These steps include the web-site mentioned above, as well as other information dissemination activities.

IV. Providing Industry A One-Year Period Within Which To Consider The Adoption Of An Etiquette Will Not Unreasonably Delay The Introduction Of Products Into The 59-64 GHz Band.

As discussed above and in prior comments filed in this proceeding, adoption of appropriate technical rules will promote spectrum sharing and enhance the efficient use of the 59-64 GHz band. The Commission's decision to give industry a fixed, one-year period within which to consider such rules appropriately balances these benefits against the costs of unnecessary delay and should not be disturbed.

Already, five months -- or nearly one-half of the one-year period -- have passed. During this time, the Working Group has met on a frequent basis and has made substantial progress toward achieving consensus on the scope and content of technical rules. The Group remains confident that it will be able to complete its work within the period specified by the Commission and that by December, 1996, it will submit its conclusions to the Commission.

Any decision to abort the standards development process at this time would squander the potential benefits of an access etiquette in return for, at most, only a brief advance in the availability of the 59-64 GHz band for commercial deployment. Indeed, it is questionable whether a decision to end the industry's efforts would speed deployment at all, given the delays inherently associated with controversial decisions, the relatively few months remaining between now and the December deadline, and the speed with which an industry-consensus standard likely could be adopted.

In addition, the work being performed by the Working Group will advance the ability to use the 59-64 GHz band internationally, thereby furthering a critically important goal. The U.S. government and industry have a unique opportunity to take the lead in developing operating parameters for the band that could be adopted by other countries or, at least, that could be used by foreign governments as the basis for their standards, thus promoting global markets for products and services.

In furtherance of this objective, one member company of the Working Group has visited governments and industry groups in Europe and Japan to discuss the work being done in the United States to develop the 59-64 GHz band for commercial use. The MWCWG has served as a forum for updating member companies about these contacts, and to serve as a point of international contact with similar groups abroad. The Japanese Ministry of Posts and Telecommunications ("MPT") was particularly interested in the work of the MWCWG. A representative of the Association of Radio Industries and Business ("ARIB"), the Japanese industry standards body for millimeter wave bands, has been designated to act as an official liaison to the MWCWG. At the same time, several MWCWG member companies have been invited to

join the ARIB, thus promoting a vital exchange of information and an opportunity to help shape and lead concurrent country efforts toward international harmonization. Japanese researchers regularly follow the progress of the MWCWG through the web site. Any decision to abort the efforts of the Working Group would thus have adverse effects on communication with international bodies that would be felt far beyond the borders of the United States.

The MWCWG also serves as a listening post for the Commission on matters of future concern. For example, it is the consensus view of the MWCWG that the ISM band [61-61.5 GHz] should not become a haven for future unlimited-power devices. The group feels that the power limits already established for communications devices in this band should also apply to unintentional radiation from industrial, scientific, and medical devices of the future.⁵ Since, to our knowledge, there are no such devices at present, now would be the time to set ISM Band power limits, before such devices are deployed.

V. If The Commission Concludes That There Should Be An Etiquette For The 59-64 GHz Band, It Should Adopt A Single Recommendation.

In the Second Notice, the Commission requested comment on whether multiple etiquettes should be adopted and whether an etiquette proposed by industry could co-exist with other etiquettes. While the MWCWG has not yet reached any conclusions regarding an etiquette, and while its recommendations could range from no etiquette to a single etiquette, to multiple compatible etiquettes, the Working Group believes that allowing multiple, non-compatible etiquettes would create a chaotic situation in the band and would essentially defeat the purpose of developing an etiquette to promote band harmony.

⁵ See Letter to Mr. Richard Smith, Chief, Office of Engineering and Technology, FCC, from Richard D. Parlow, Associate Administrator, NTIA (dated April 12, 1995).

The Working Group firmly believes that any recommendation adopted by the Commission should be flexible enough to allow a wide variety of transmitter types and should in no way preclude new technologies. Therefore, the MWCWG seeks to develop such a recommendation. The MWCWG is not aware of any alternative proposals from other groups, individuals, or organizations at this time.

CONCLUSION

For the reasons stated herein, the Working Group urges the Commission to permit it to continue its efforts to study and develop recommendations for a single set of technical rules for the 59-64 GHz band.

Respectfully submitted,

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